Statement of Senator Jeff Bingaman (D-NM)
Hearing on Federal Research and Development Funding
Subcommittee on Science, Technology, and Space
Committee on Commerce, Science, and Transportation
April 28, 1998

I am very pleased to be here this afternoon to urge your support for S.1305, the National Research Investment Act of 1998.

For the past 100 years, science and technology have been vigorous engines for U.S. economic growth. Over the past 50 years, as Vannevar Bush recommended in *Science: The Endless Frontier*, the Federal government has taken responsibility for " promoting the flow of new scientific knowledge," and has become the nation's primary steward of the health of science and technology. What Vannevar Bush did not foresee, when he wrote his classic report, is that our system of research and innovation would become vastly more complicated and nuanced than the model he advanced, in which the role of universities was to conduct basic research and the role of industry and government was to conduct applied research.

In fact, our success in maintaining our leadership as the world's preeminent technological nation is largely due to the complex and uniquely powerful way in which the R&D institutions in our society create new knowledge and put it to work for everyone's benefit.

In this context, the provisions of S. 1305 are simple and elegant. The bill calls for balanced increases in the overall Federal expenditure of research and development, and provides a few core principles for Federal involvement in civilian research and development. The bill does not attempt to micromanage Federal science and technology programs. It respects the diversity that exists among these programs and the limits of our own knowledge about how best to spur creativity and innovation.

As everyone in this room knows, the real world of research and innovation looks nothing like the traditional cartoon picture of R&D, showing an arrow going from basic research to applied research to development and then to products. In the real world, research and innovation proceeds by an amazing diversity of institutions, motivations, time scales, and pathways to success. We also know that the marketplace to which innovation responds often displays a form a competition that economist Joseph Schumpeter termed "creative destruction." That is to say, in the technology marketplace, firms do not merely try to be a little better than their competition. Sometimes they seek to radically transform the struggle by inventing new products and forms of organization that will make their competitors obsolete and extinct. I expect we'll see more and more of this sort of competition in the next century. To survive in the marketplace of the future, America's industries and research performers will have to constantly innovate, constantly evolve, or the key markets of the future will pass us by.

The picture that emerges from this description sounds almost biological. The United States has a rich, vigorous "ecosystem" of innovation. Our research and innovation system is not dominated

by a simple, mechanistic process that fits on a single overhead, but by complex series of webs and interconnections. It features an incredible diversity of actors, and is marked by chance, chaos, competition, and cooperation.

Given that reality, I believe that S.1305 judiciously avoids establishing a set of "one-size-fits-all" management provisions that would not appropriately address the complexity of our research and innovation system.

S.1305 also demonstrates that the time is ripe to develop a bipartisan consensus on the future Federal stewardship of our research and innovation system. The cosponsors of S.1305 come from across the political spectrum in the Senate. I believe that this is an indication that most of the acrimony of recent years about Federal science and technology programs has died down.

S.1305 comes at a time of auspicious trends. R&D funding, both in industry and the Federal government, is up in real terms. The President's proposed budget for fiscal year 1999 will increase civilian R&D considerably. Our overseas competitors, particularly in Asia, are down on their luck at the moment. And the U.S. economy as a whole is the best it's been in a generation, and is currently the envy of the world.

But none of these trends are likely to last very long. We should take full advantage of the reprieve that we've been given to develop a new bipartisan consensus and understanding that will guide us when times get tough again. The major study of science and technology policy being conducted by the House Science Committee may be an important contribution to that process. I look forward to seeing what emerges from their work. The efforts of the Senate Science and Technology Caucus may also be of help.

I think, though, that the greatest contribution will come from the U.S. science and technology community, itself. S.1305 has unified and energized this community to a degree that has not been seen before. Hundreds of scientific and technical professional societies have endorsed S.1305. In late February, hundreds of scientists and engineers from around the country converged on Washington to support this bill and to discuss the importance of R&D with their Congressional Representatives and Senators. That was an important opportunity to bring the new bipartisan approach to science and technology to the attention of Representatives and Senators in a way that would not have been possible, but for this legislation.

I hope that each member here today will join our bipartisan coalition in support of major increases in science and technology funding. We could achieve the goal of S.1305 tomorrow, if we were simply to apply this year's budget surplus to science and technology. Surely, over a 10-year period that could be marked by many more budget surpluses, a doubling of research and development support by the Federal government is a reasonable proposition. I appreciate your interest in the bill, and I look forward to working with you to advance this legislation.